CONFIGURATION MIGRATION UTILITY

FortiConverter™ 4.3

User Guide

FortiConverter™ 4.3 User Guide

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Revision 1

Technical Documentation	http://help.fortinet.com
Knowledge Base	http://kb.fortinet.com
Forums	https://support.fortinet.com/forums
Customer Service & Support	https://support.fortinet.com
Training	http://training.fortinet.com
FortiGuard Threat Research & Response	http://www.fortiguard.com
License Agreement	http://www.fortinet.com/doc/legal/EULA.pdf
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Table of contents

Introduction 4

Supported vendors & configuration objects 4
Licensing 7
System requirements 7
Enabling visual effects (Aero) in Windows 7 or Windows 8 7

What's new 10

Installation 11

Uploading the license 13

Conversion 15

Downloading configuration files that you want to convert 15
Check Point 15
Cisco 15
Juniper 15
SonicWALL 16
Using the conversion wizard 16
Checking the results of your automatic conversion 23
Fine-tuning 30
Fine-tuning NAT conversion 30
Deleting a line of the configuration 32
Finding references to objects 32
Filtering rows to display only matching data 33
Reordering columns 33

Understanding your new configuration 34

Check Point differences 34
Cisco IOS, PIX or ASA differences 35
Juniper ScreenOS or JunOS differences 35
SonicWALL differences 36

Introduction

This document shows how to install and use FortiConverter™ 4.3.

FortiConverter is designed to make it easy to migrate your network to Fortinet network security solutions, significantly reducing workload and minimizing errors. FortiConverter translates configuration files from other vendors' firewall products into a valid FortiGate or FortiManager configuration file. Because the output uses command line syntax, it can either be uploaded as a configuration file or piped to the CLI.

For additional documentation, please visit:

http://help.fortinet.com/fconverter.html

Supported vendors & configuration objects

FortiConverter can translate the following configurations from the following platforms.

Some parts of the configuration may not be translatable by software due to dependencies or syntax that does not exactly correspond. If so, you must manually convert these parts, deciding how your new system will behave.

If objects exceed the maximum valid length for FortiGate or FortiManager, those objects will be trimmed.

Vendor	Models	Versions	Convertible Objects
Check Point	Smart Center Provider-1	NG FP1 (4.) to NGX R64/R71/R75/R76	Interfaces (Physical, Logical, Loopback, PPPoE) Addresses & Address Groups Static Routes Services & Service Groups Policies (rulebases.fws) Schedules Rules NAT (Automatic & Rule)

			VPN (IPSec) Local Users & Groups RADIUS, TACACS+, & LDAP Negate Cell
Cisco	PIX ASA FWSM	4.x to 8.x	Interfaces (Physical, Logical, Loopback, PPPoE, Tunnel) Addresses & Address Groups DHCP Servers DNS Servers Static Routes Services & Service Groups Time Ranges ACLs NAT (including Object NAT and Double NAT) IP Pools VPN (IPSec, PPTP/L2TP, EZVPN) Local Users & Groups RADIUS, TACACS+, & LDAP
	IOS	10.x to 12.x 15.x	
Juniper	SSG	ScreenOS/JunOS 5.x to 6.x	Interfaces (Physical, Logical, Loopback, PPPoE, Tunnel) Zone Addresses & Address Groups & FQDNs DHCP Servers & Client & Relay Static Routes Services & Service Groups Policies VIPs/MIPs NAT IP Pools VPN (IPSec, PPTP/L2TP)

			Local Users & Groups RADIUS & LDAP
	SRX	JunOS 10.x, 11.x, 12.x	Interfaces (Physical, Logical, Loopback, PPPoE, Tunnel) Zone Addresses & Address Groups & FQDNs DHCP Servers & Client & Relay Static Routes Services & Service Groups Policies VIPs/MIPs NAT IP Pools VPN (IPSec, PPTP/L2TP) Local Users & Groups RADIUS & LDAP
SonicWall	NSA Serials	SonicOS Enhanced 5.x	Interfaces (Physical, Logical, Loopback, PPPoE) Zone Addresses & Address Groups & FQDNs DHCP Servers & Client & Relay Static Routes Services & Service Groups Schedules Policies NAT Local Users & Groups

Licensing

Without license activation, FortiConverter functionality will be limited by a free license:

- fine-tuning will not be available
- conversion output will be limited to 100 lines of CLI configuration (the full conversion will be viewable, but will not exist in the configuration output)
- SonicWall conversion will not be supported

If you have purchased and uploaded a license, FortiConverter will be unlocked and those limitations removed. Your paid license entitles you to all new versions of FortiConverter that are released until the license expires.

System requirements

To install FortiConverter, you must have a computer with one of the following operating systems:

- Microsoft Windows 8 (32-bit or 64-bit)
- Microsoft Windows 7 (32-bit or 64-bit)
- Microsoft Windows Vista (32-bit or 64-bit)
- Microsoft Windows XP (32-bit)

Your computer also must have .NET Framework 4.0 installed. If it does not, the installer will prompt you to download and install it first.

A web browser is required to view conversion reports.

Enabling visual effects (Aero) in Windows 7 or Windows 8

Without Aero effects, many premium user interface (UI) visual experiences such as windows with translucent glass effects and new windows colors won't appear on FortiConverter.

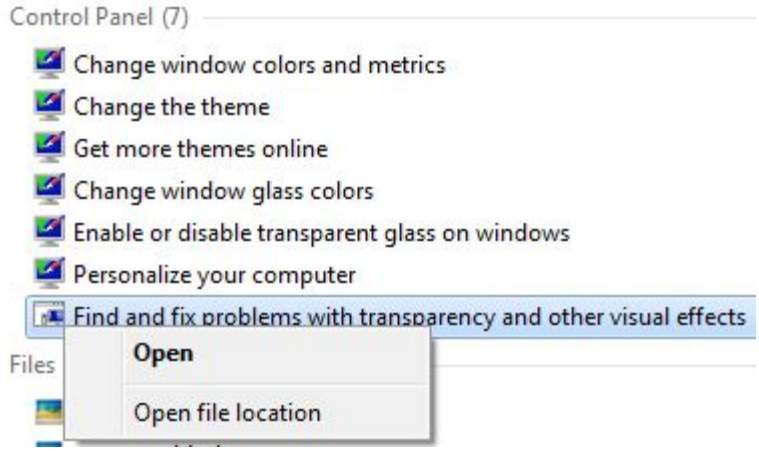
To display Aero effects in Windows 7

1. Calculate your Windows Experience Index to verify that your computer's hardware is capable of supporting Aero.
2. Click the *Start Menu* to open it
3. Type the following text into the *Start Menu* search box:

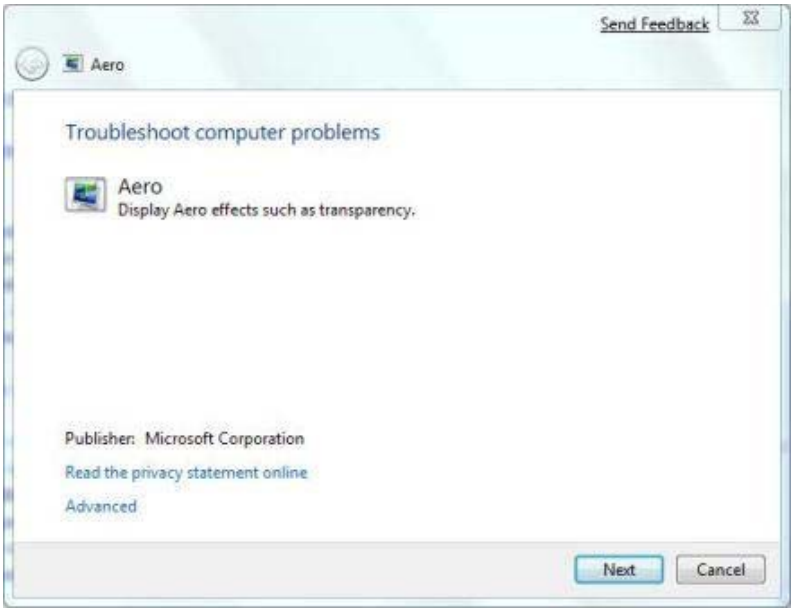
   `Aero`

4. In the *Control Panel* group, click *Find and fix problems with transparency and other visual effects*.

If that option does not appear in the search results, click *Control Panel* to see all Aero-related items in the Control Panel.

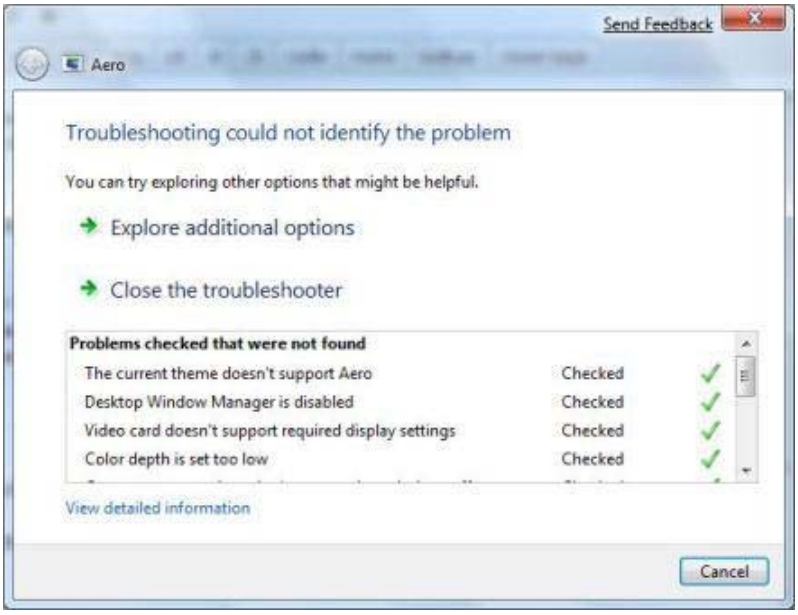


5. An *Aero – Troubleshoot computer problems* wizard dialog will appear. Click *Next*.



6. The troubleshooting wizard will try to detect any problem in various components required by Aero, such as video memory, the Desktop Window Manager (DWM) service, color depth, theme, power settings, etc. When the analysis is complete, the wizard will attempt to fix the issues, and then restart Aero.

If there are still items that are marked with a red X (problems that prevent Aero from functioning properly), fix the issues, then rerun the *Find and fix problems with transparency and other visual effects* troubleshooting wizard again.



What’s new

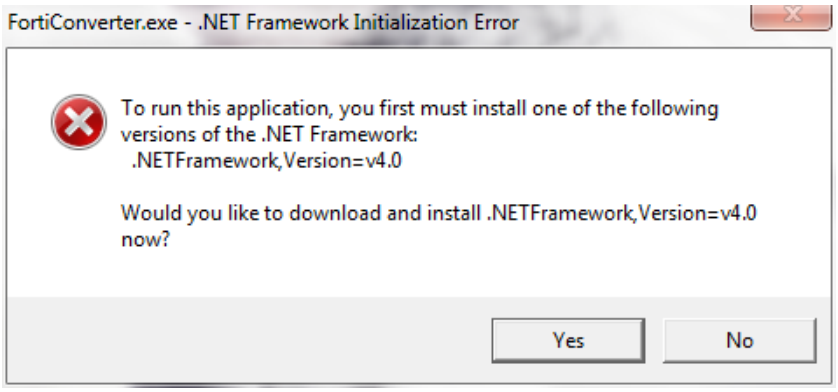
- Added progress messages to enable you to track the progress of large conversions
- Added tool tips to conveniently display details while hovering your mouse over a NAT object
- Tabs now split NAT fine-tuning by NAT type so that you can easily focus on fine-tuning each NAT object type (for example, the Dynamic NAT tab will appear only if your previous firewall vendor/model supported DNAT, and that tab will show only DNAT objects; in FortiConverter 4.2, DNAT objects etc. were interspersed in the list of all NAT objects)
- For migrations from Check Point:
    - Support for Provider-1 models and MDS input
    - Support for partial or complete MDS conversion (select which modules, domains, global policy collections, and/or domain policy collections you want to convert)
    - Report showing objects that could not be converted
- For migrations from Cisco:
    - Support for object NAT and double NAT on ASA platforms
    - Report showing objects that could not be converted

Installation

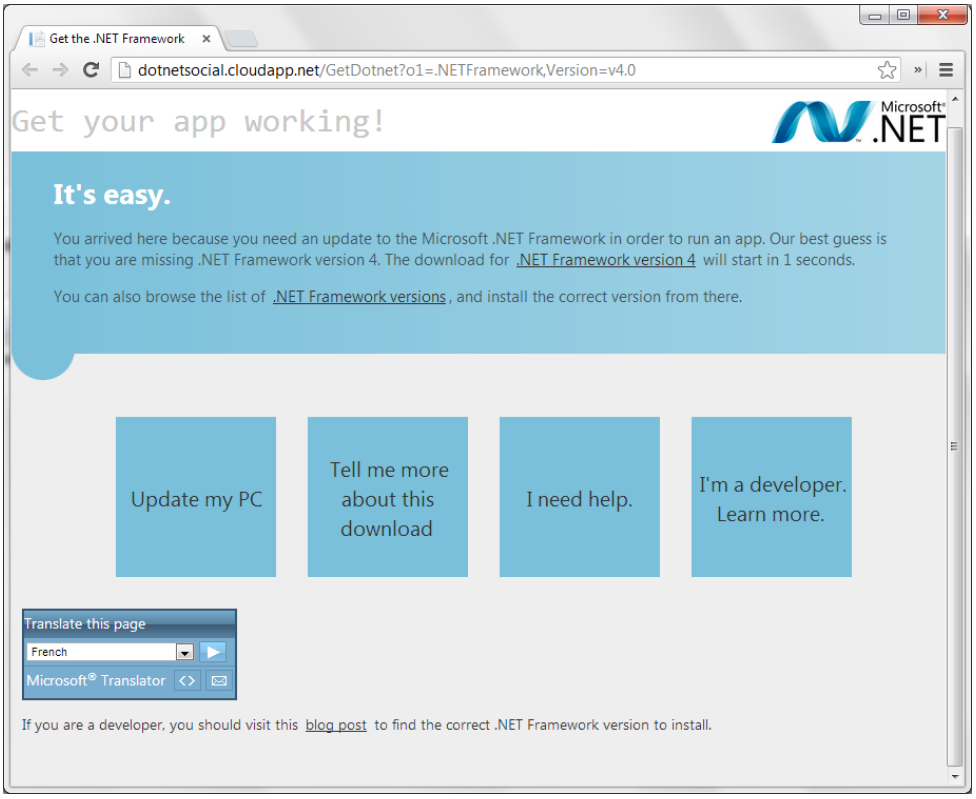
You can download the FortiConverter installer from Fortinet Technical Support's web site, https://support.fortinet.com .

To install FortiConverter

1. Double-click the FortiConverter installer executable (.exe).



If your computer does not have the required Microsoft .NET Framework 4.0, you will be prompted to install it before the installer will launch. Download it from Microsoft's web site.



Otherwise, the beginning of the installer should appear.

2. Read the license agreement. If you agree to the terms, mark the *I accept the terms of the License Agreement* check box, then click *Next*.
3. If you want to install in a different location, click *Browse* and select the directory. Otherwise, click *Next*.
4. Select the *Start Menu* folder in which you would like to create the program's shortcuts, then click *Install*.
5. Click *Finish* to exit the FortiConverter installer.

Uploading the license

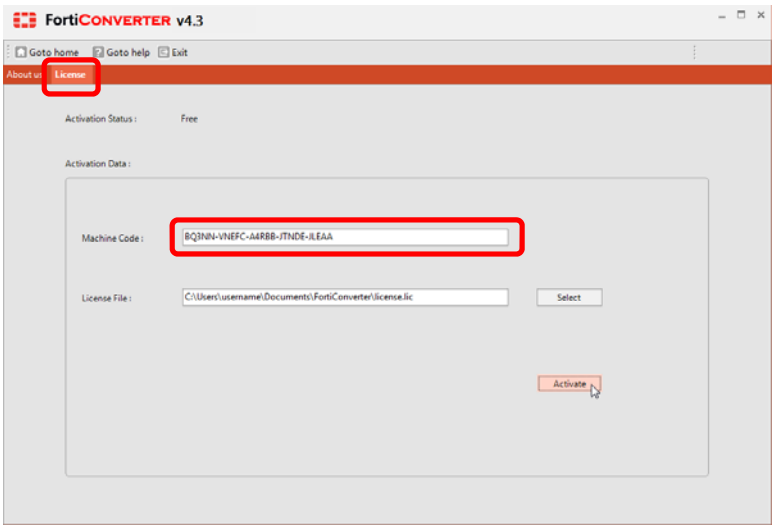
After installation, FortiConverter initially has a restricted but free license. If you have purchased an unrestricted license, upload it to unlock additional capabilities.

To activate the license

1. Start FortiConverter.

2. Click the *System* Setting square.

3. Click the *License* tab.
4. Copy the contents of the *Machine Code* field.

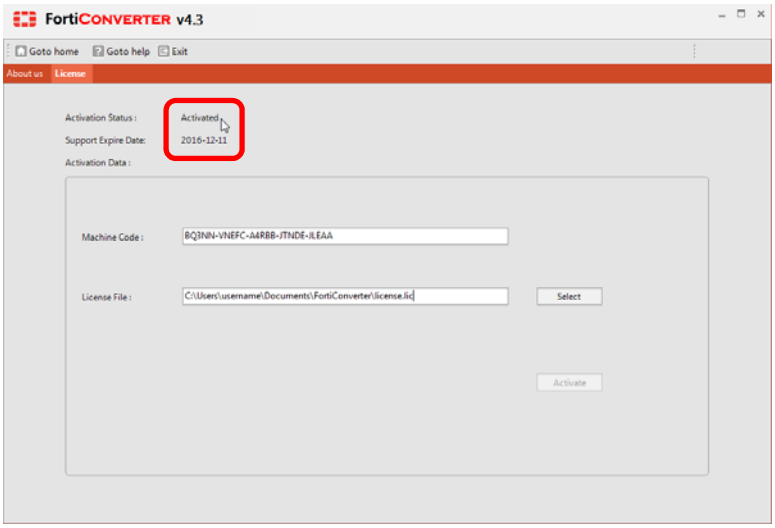


5. Start a web browser and go to the Fortinet Technical Support web site:

   https://support.fortinet.com/

   Enter your machine code to activate and download your FortiConverter license (.lic file).
6. Return to FortiConverter. Click the *Select* button to locate the .lic file, then click *Activate*.

   FortiConverter will validate the license file. If it is valid, *Activation Status* will change from *Free* to *Activated*. Your license will be valid for all FortiConverter software updates released until the date in the *Expire Date* field.



Conversion

After inputting your previous vendor's configuration files, you can fine-tune the conversion before outputting your new FortiGate or FortiManager configuration file.

Downloading configuration files that you want to convert

First, download your existing configuration to your computer where FortiConverter is installed.

Procedures vary by vendor. Some vendors divide the configuration into multiple files, so make sure to download all files.

Check Point

To get the configuration, you must download 3 or 4 files:

- **Object definitions**— 'objects_5_0.c' (Check Point NG/NGX) or 'objects.c' (Check Point 4.x) contains the firewall's object definitions. If converting from Platform-1, 'mcss.c' contains the MDS hierarchy files.
- **Policy and rule definitions**— '*.w' or 'rulebases_5_0.fws' The file name is <rule>.W (default Standard.W). or rulebases_5_0.fws . You can get them from the directory "[SmartCenter]\fw1\conf\".
- **Route information** — Helps FortiConverter to correctly interpret the network topology being converted. To get this data, enter the `route print` command, then copy and paste the output into a plain text file. Codes in the output indicate if it is a directly connected interface, a host route, a network route, and so forth. The output varies by the platform.
- **User and user groups file** — fwauth.NDBx

Cisco

To get the configuration, enter the `show running-config` command, then copy and paste the output into a plain text file.

Juniper

To get the configuration, use either the web UI (go to *Configuration* > *Update* > *ConfigFile*) or CLI (enter the `get conf` command, then copy and paste the output to a plain text file).

SonicWALL

To download the configuration (*.exp file), use the web UI and go to *System* > *Settings* > *Export Settings*.

Using the conversion wizard

FortiConverter guides you to automatically migrate as much as possible of the configuration. At that point, you can optionally manually fine-tune the results before exporting the final FortiGate or FortiManager configuration file.

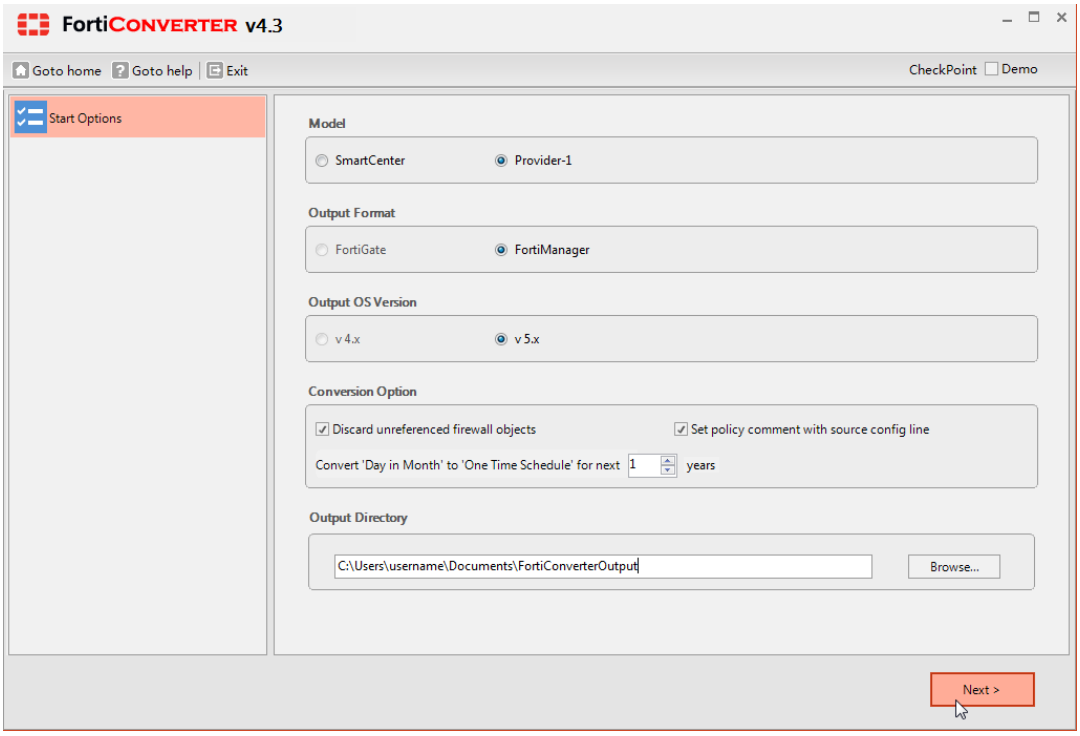
Steps below show a conversion from a Check Point firewall. Conversions from other vendors' firewalls are usually similar. If using a Check Point Provider-1, however, follow Using the conversion wizard with Check Point Provider-1 files instead.

To return to any previous step in the wizard, click its name in the panel on the left side.

To migrate your configuration

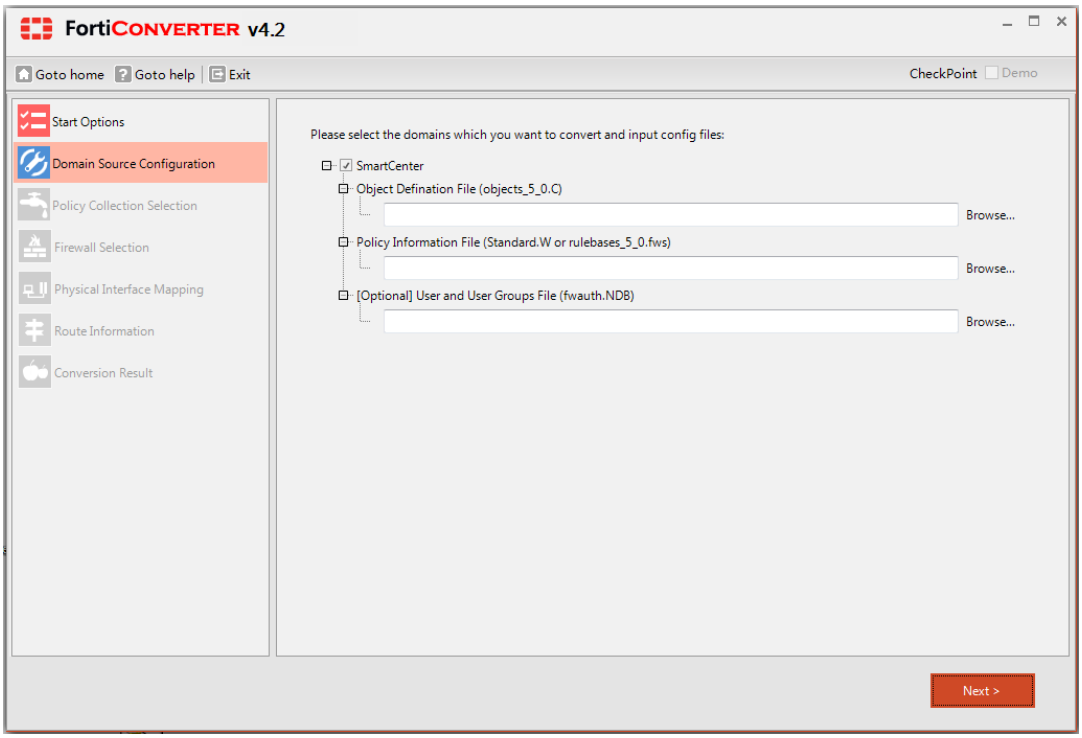
1. Start FortiConverter, then click on your prior vendor's square.

2. Choose your *Start Options*, such as your old firewall or centralized management model, FortiGate or FortiManager output, whether or not to discard unreferenced objects and comments, and the directory where you want output files to be saved.



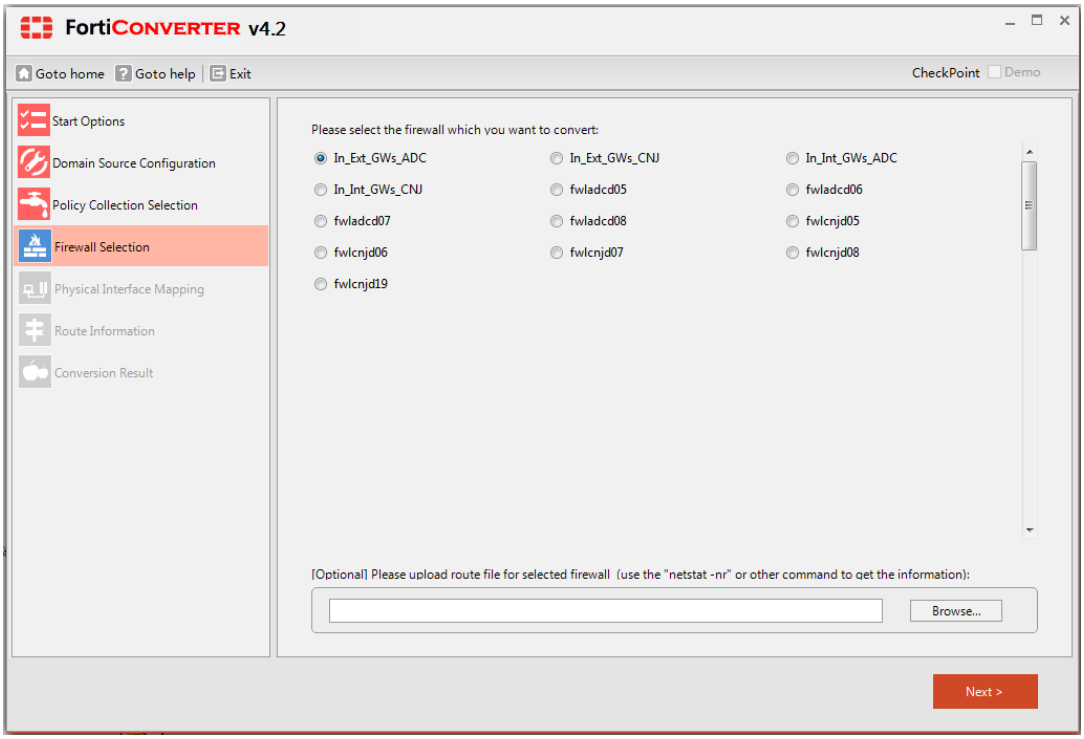
You can also define how to handle the “Day in Month” setting on Check Point firewalls. Check Point firewalls have a time object that specifies days of the month, but this does not exist on FortiGate. As a closest equivalent functionality, by default, FortiConverter will create FortiGate one-time use schedules for 1 year; each specify a date. You can adjust the number of one-time schedules that FortiConverter will create if you want to make schedules for 2 years or more, or if you do not want any schedules to be created. When you are ready, click *Next*.

3. Load your previously downloaded configuration files, then click *Next*.

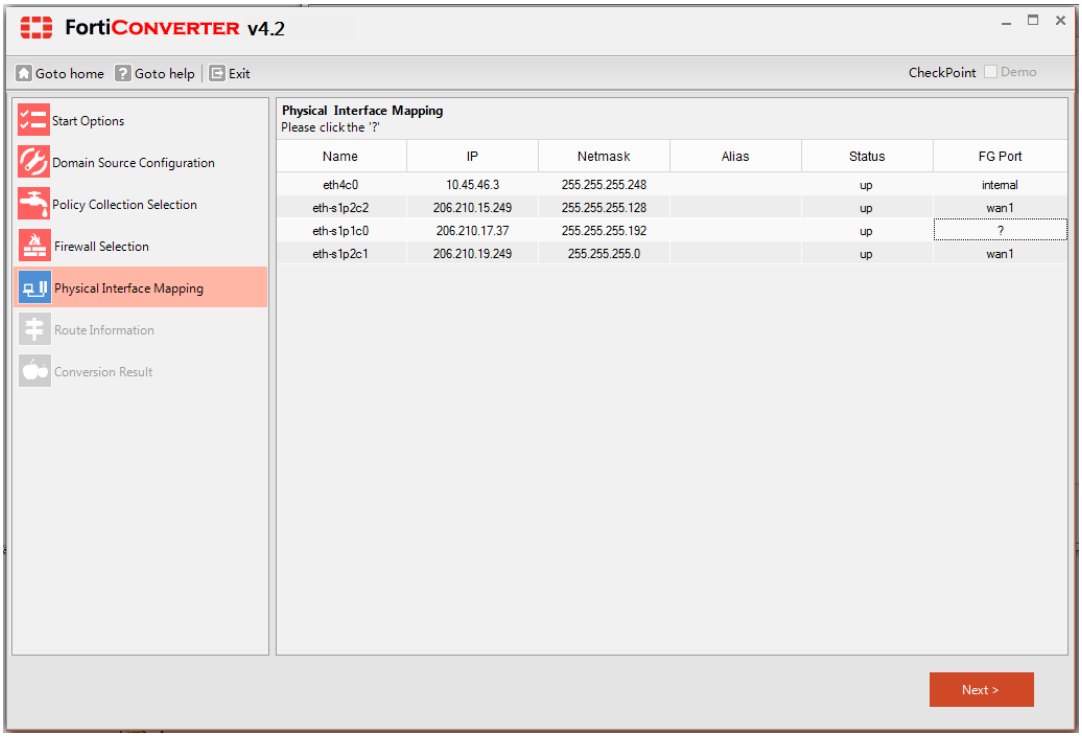


3. If you have more than one collection of policies, select one to convert, then click *Next*.

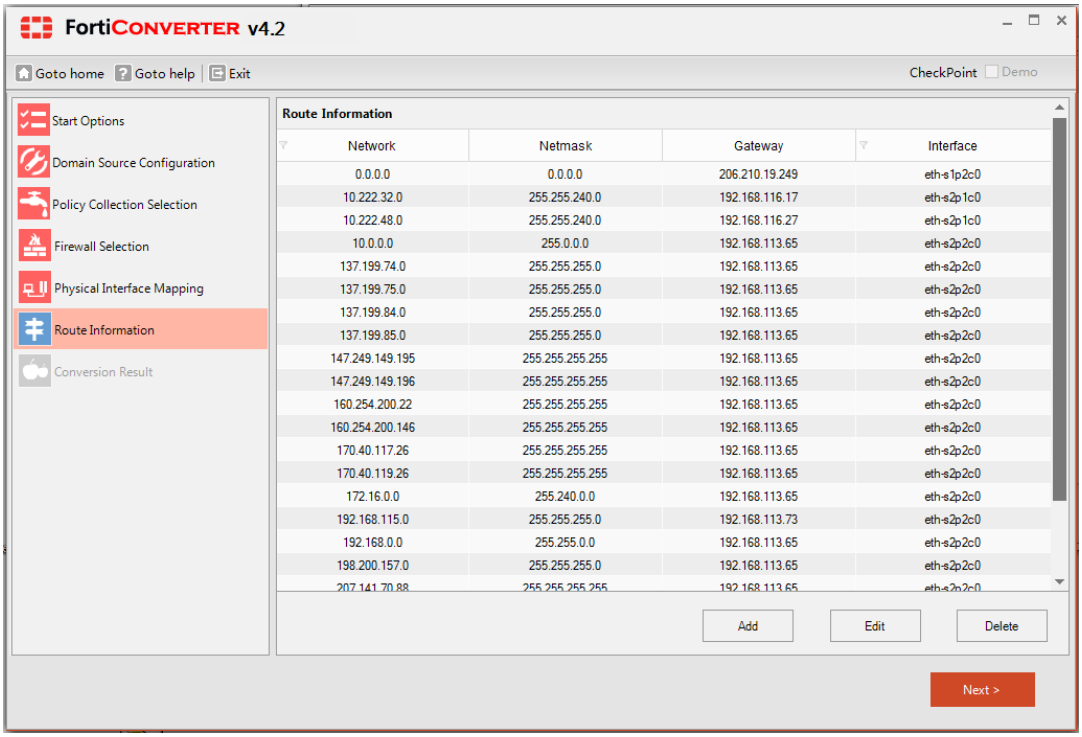
4. If you are migrating from Check Point, select which firewall model that you have. (Check Point may store multiple firewalls in the object definition file. If only one was contained in the configuration file that you loaded, you may not need to select anything.) Also select which policy package you would like to convert — you can select one or many. When you are done, click *Next*.



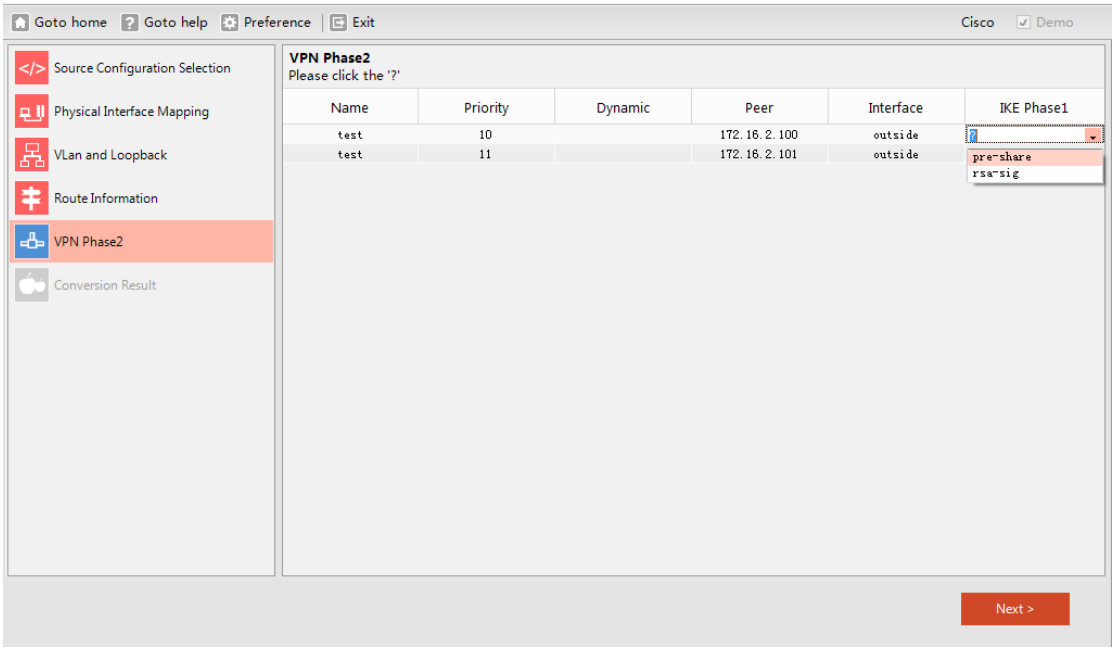
5. Specify the new names that your network interfaces on Check Point / Cisco / Juniper/ SonicWALL will have on your new FortiGate firewall.



5. If there are logical interfaces such as VLANs or loopback interfaces defined in the configuration that you are converting, verify their conversion. To correctly interpret the direction of rules and interface, add routing information. (Temporary routes will not be part of the final configuration.)



6. If you are converting Cisco IPSec Phase 1 and Phase 2 definitions, these cannot be automatically converted. Enter them manually, then click *Next*.



7. Review the results of the conversion using reports. Fine-tune if necessary.

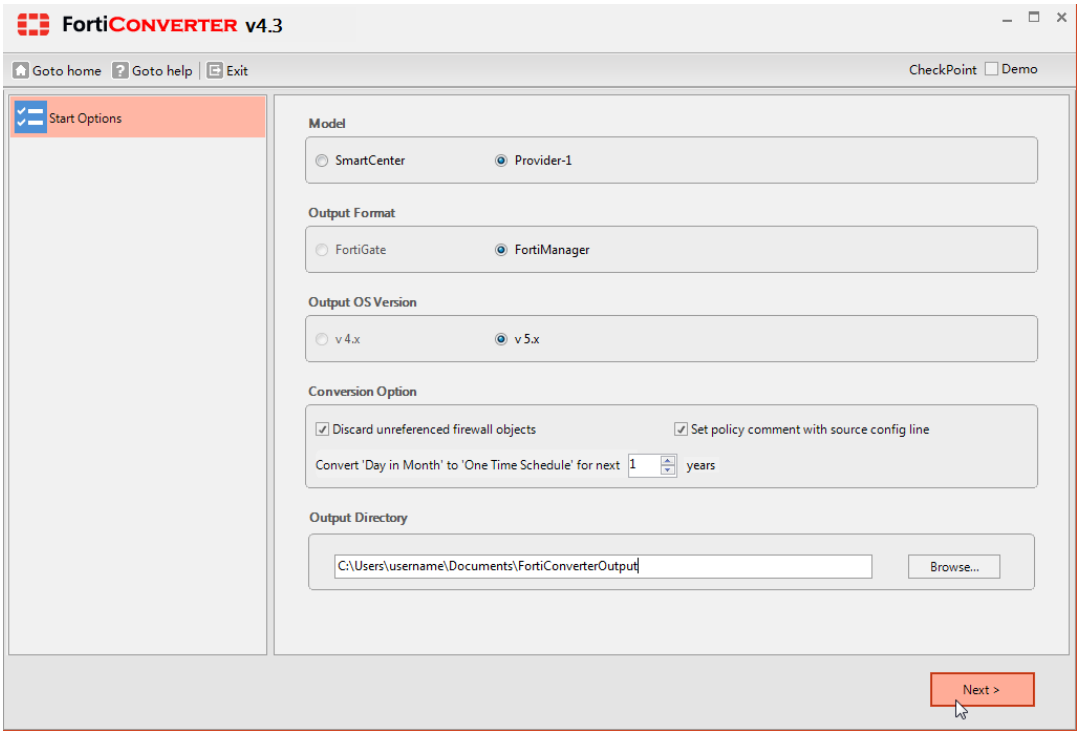
Using the conversion wizard with Check Point Provider-1 files

Conversion from a Check Point Provider-1 is different from most other configuration conversions.

To migrate your configuration

1. Start FortiConverter, then click on the *Check Point to FortiGate* square.

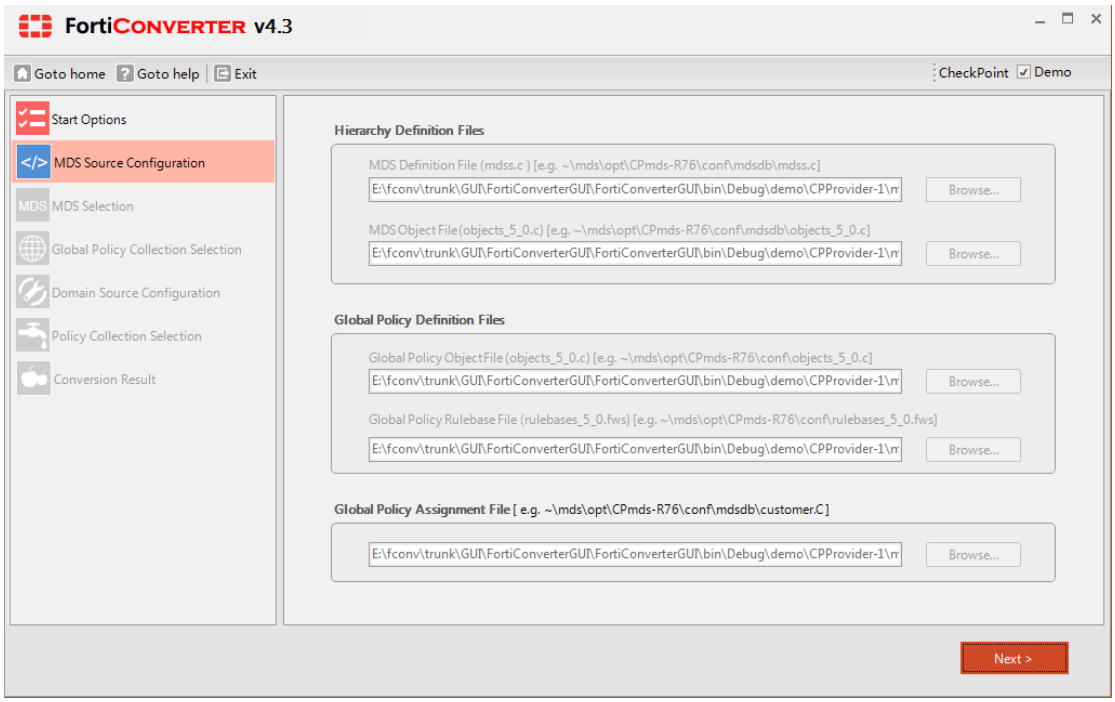
2. Choose your *Start Options*, such as your old firewall or centralized management model, FortiGate or FortiManager output, whether or not to discard unreferenced objects and comments, and the directory where you want output files to be saved.



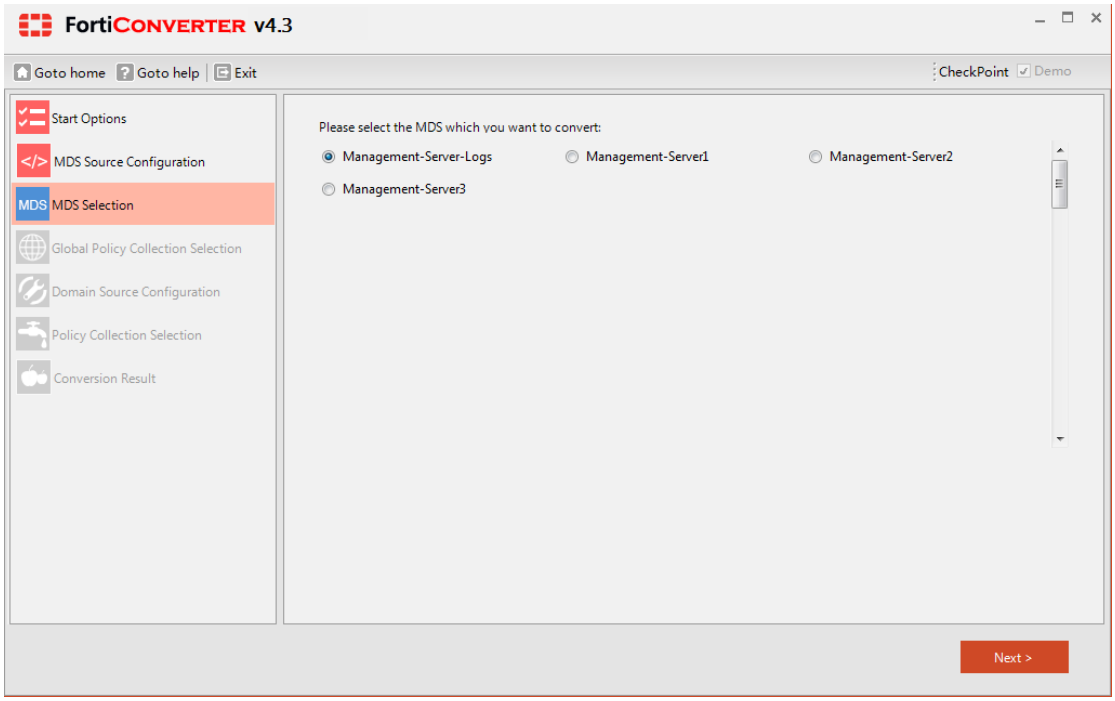
You can also define how to handle the “Day in Month” setting on Check Point firewalls. Check Point firewalls have a time object that specifies days of the month, but this does not exist on FortiGate. As a closest equivalent functionality, by default, FortiConverter will create FortiGate one-time use schedules for 1 year; each specify a date. You can adjust the number of one-time schedules that FortiConverter will create if you want to make schedules for 2 years or more, or if you do not want any schedules to be created. When you are ready, click *Next*.

3. Load your previously downloaded configuration files, then click *Next*.

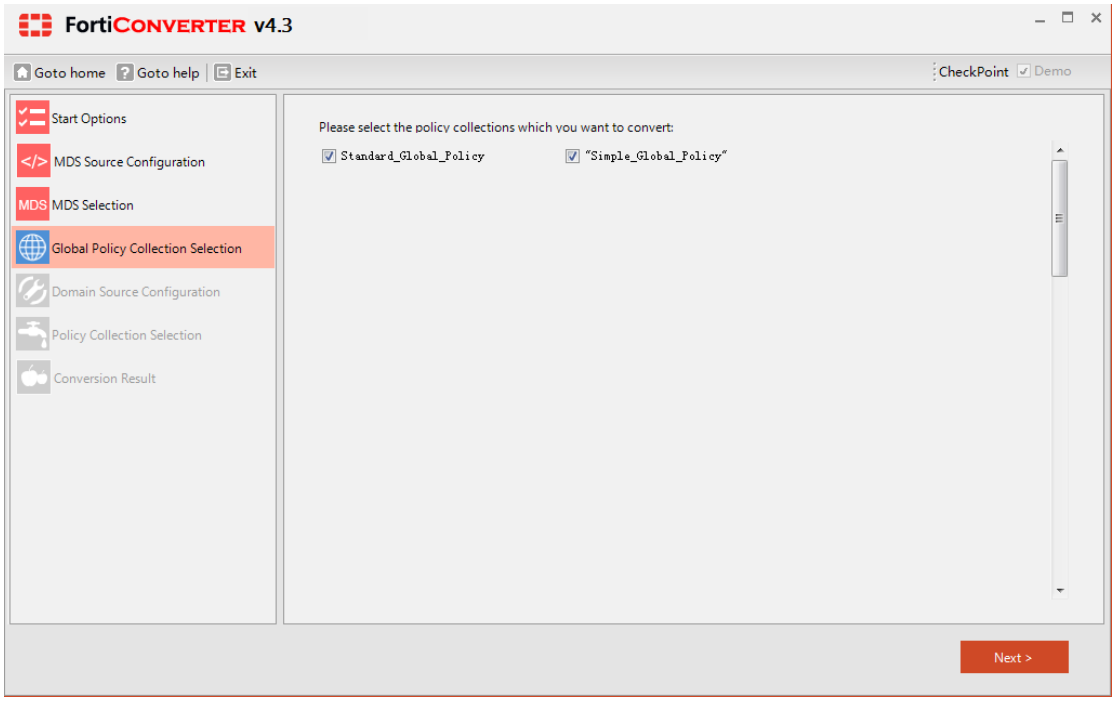
   Because MDS files can be very large, a progress indicator will appear if it may take more than a few seconds to load your file.



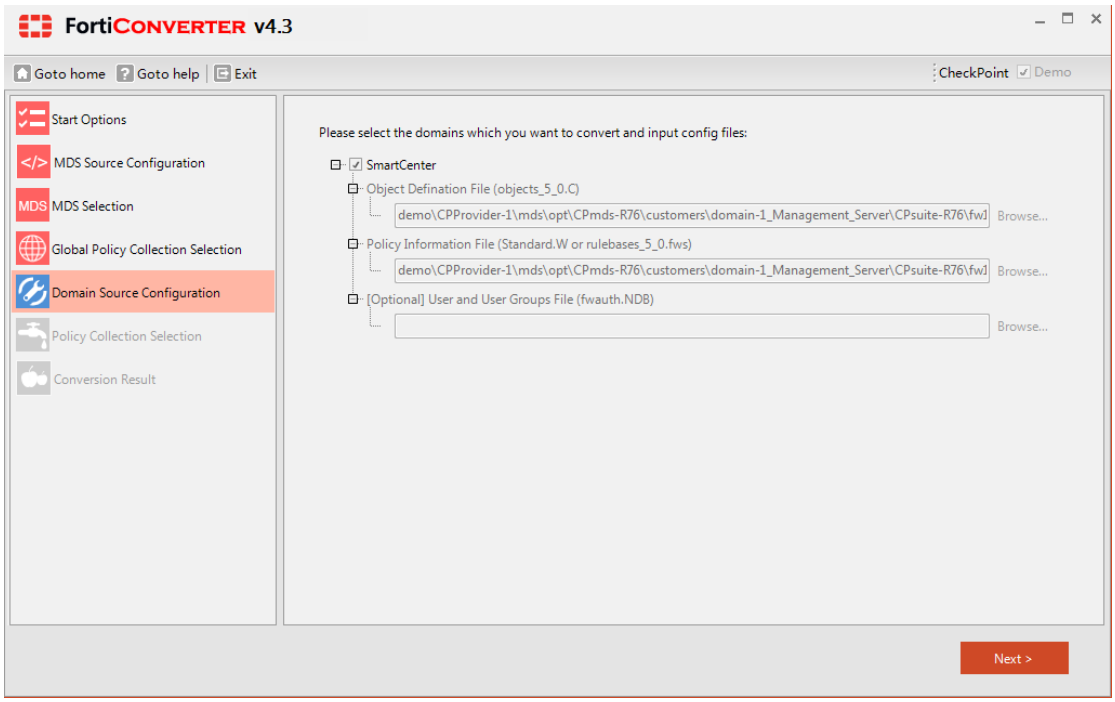
4. Select which component in the MDS file to convert, then click *Next*.



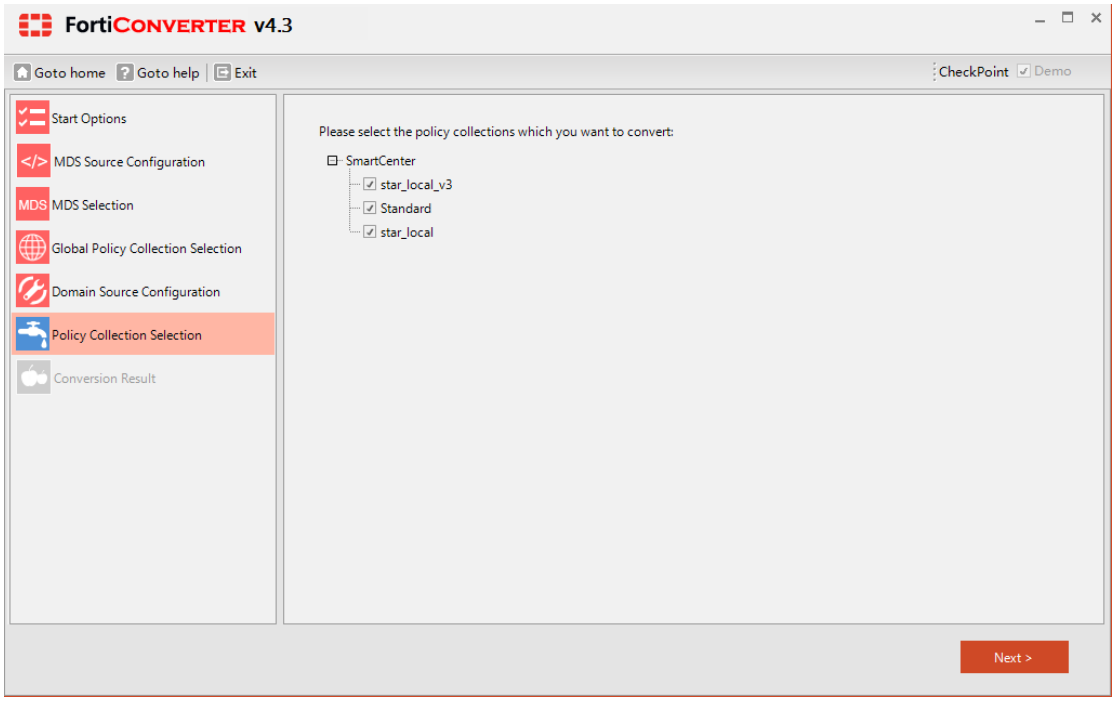
5. Select which collections of global policies to convert, then click *Next*.



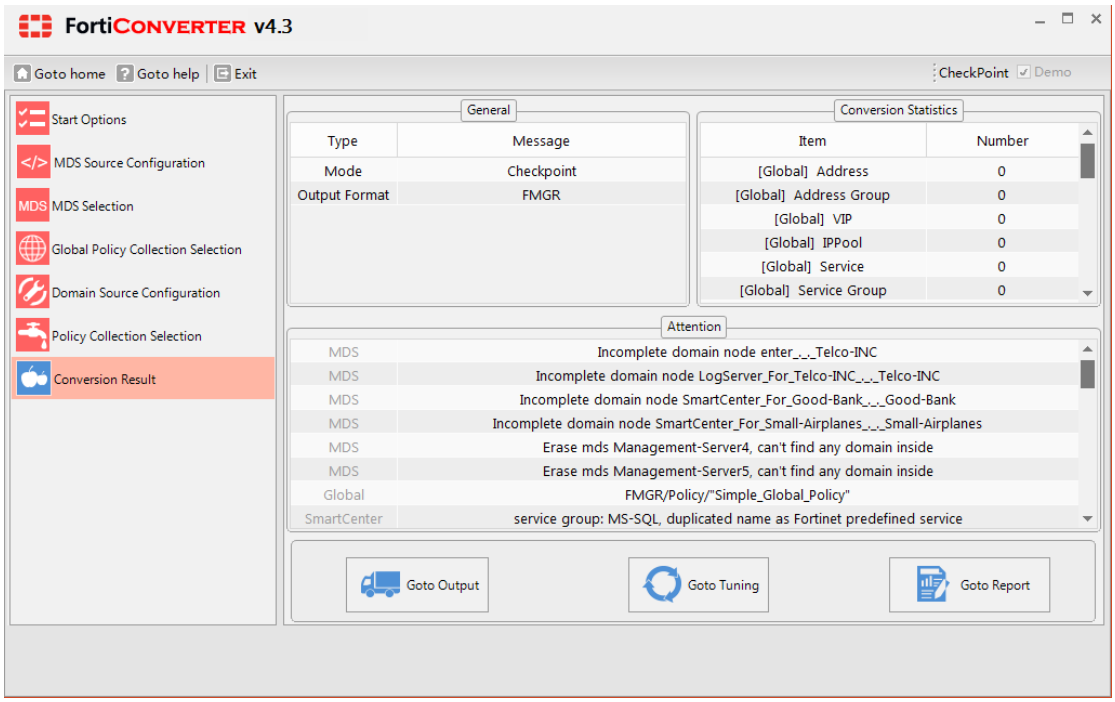
6. Select which domains to convert, then click *Next*.



7. Select which policies to convert from the previously selected domains, then click *Next*.

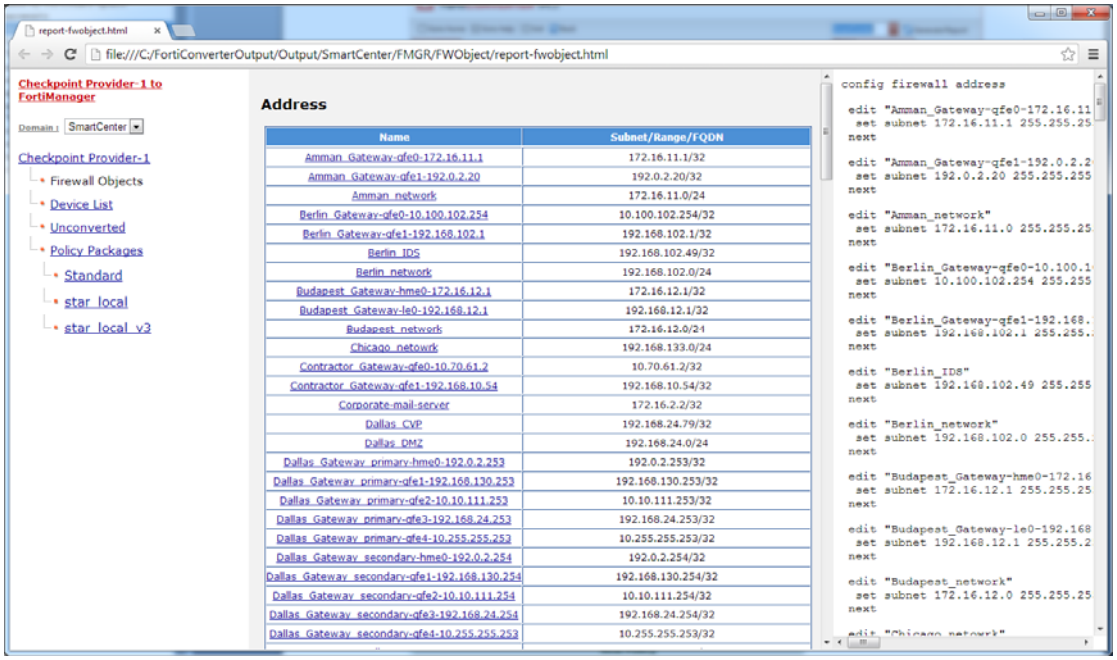


8. Review the results of the conversion using reports. Fine-tune if necessary.



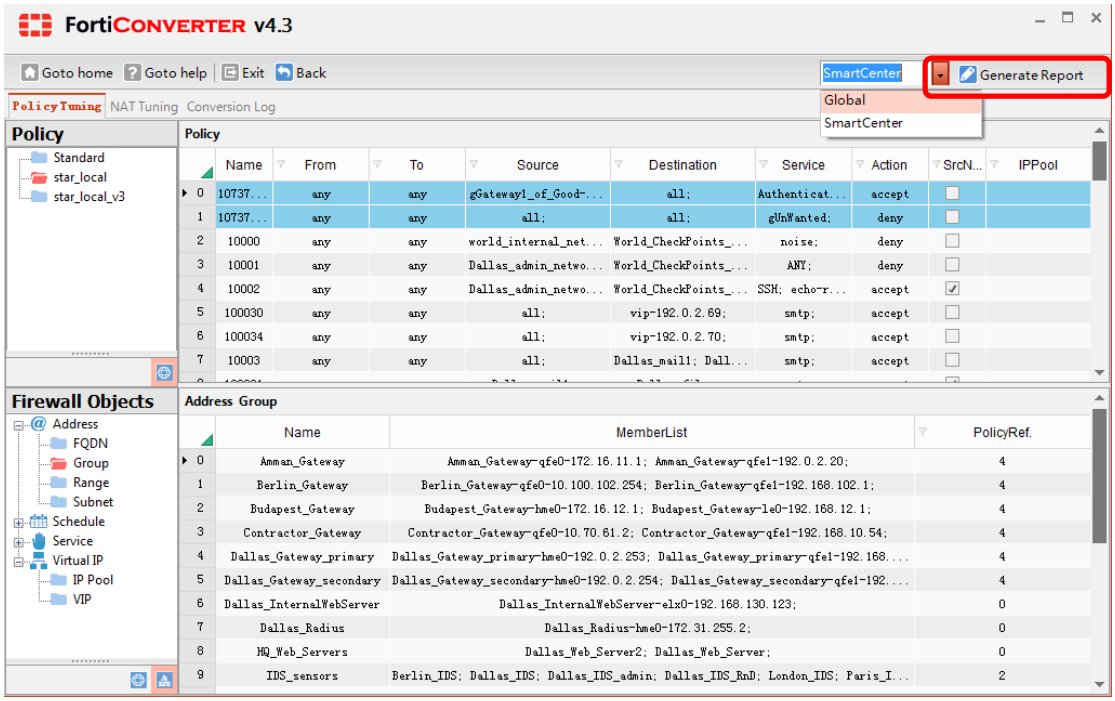
Checking the results of your automatic conversion

To see a summary of the conversion, including objects that could not be automatically converted (and therefore may require you to fine-tune or manually convert), click *Go to Report*.



FortiConverter will open the summary of the conversion in your web browser.

Alternatively, begin fine-tuning, then click the *Generate Report* button. The configuration will be generated according to your specifications while you were fine-tuning.

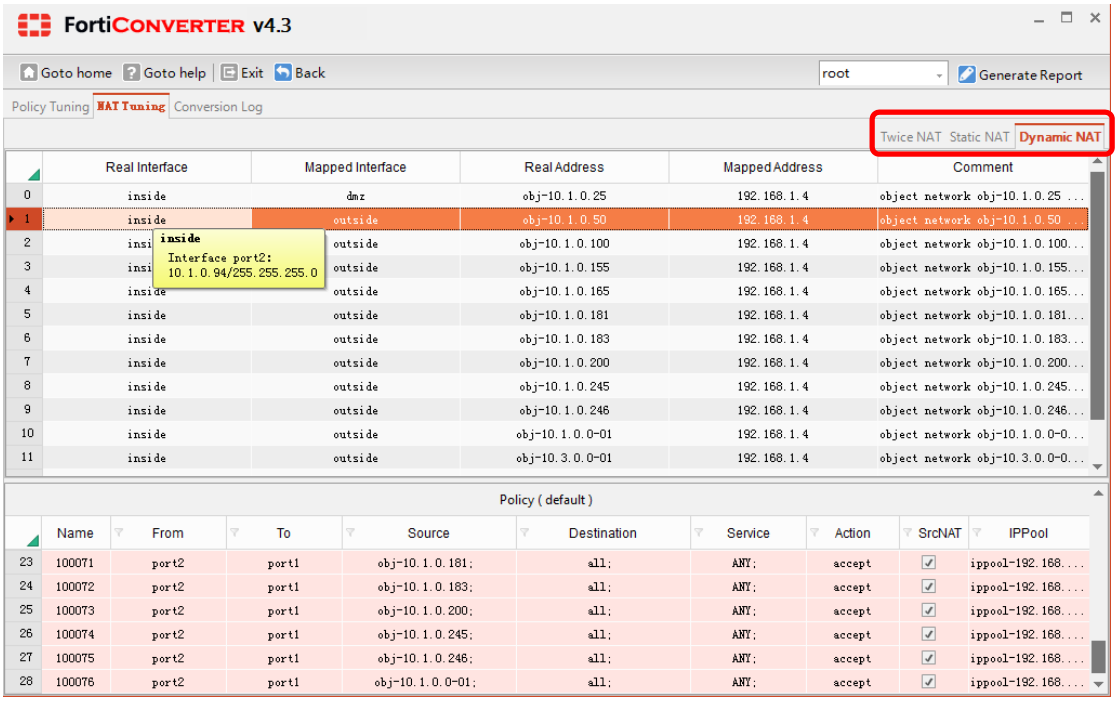


Fine-tuning

After FortiConverter has translated as many of your configuration objects as possible, you may need to fine-tune remaining objects that could not be converted, or where you want to add or change settings. Once complete, you can go to the output and exit FortiConverter.

Fine-tuning NAT conversion

NAT has been divided into categories: Source NAT, Destination NAT, Static NAT, Object NAT, Double NAT, and NAT Rule.



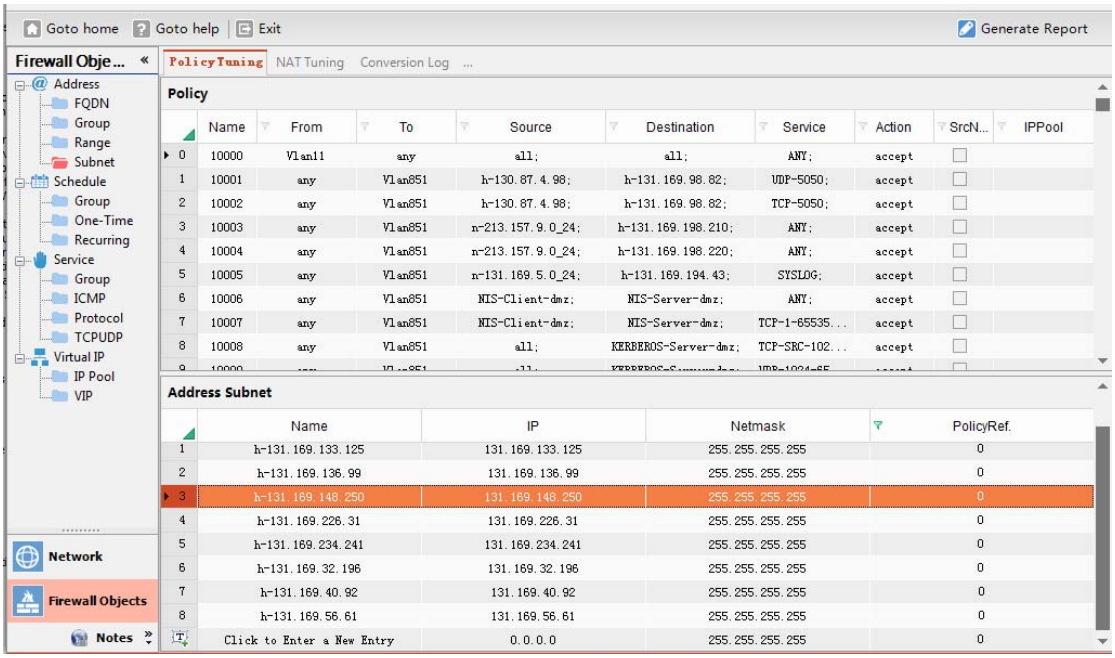
Note:

1. For a Juniper-ScreenOS configuration which already has NAT that is configured inside a policy, it will be automatically converted. NAT fine-tuning is not required.
2. For some of the cases, where interfaces/addresses and service match completely, NAT will be automatically merged into the policy.

(Polices with a number starting at 100000 are pure NAT policies which must be manually merged, and always placed at the bottom, below all security policies.

Deleting a line of the configuration

To delete a specific line, click the row's index number, then press the Delete key. ***Only items that are not referenced by any policy or group can be deleted.***

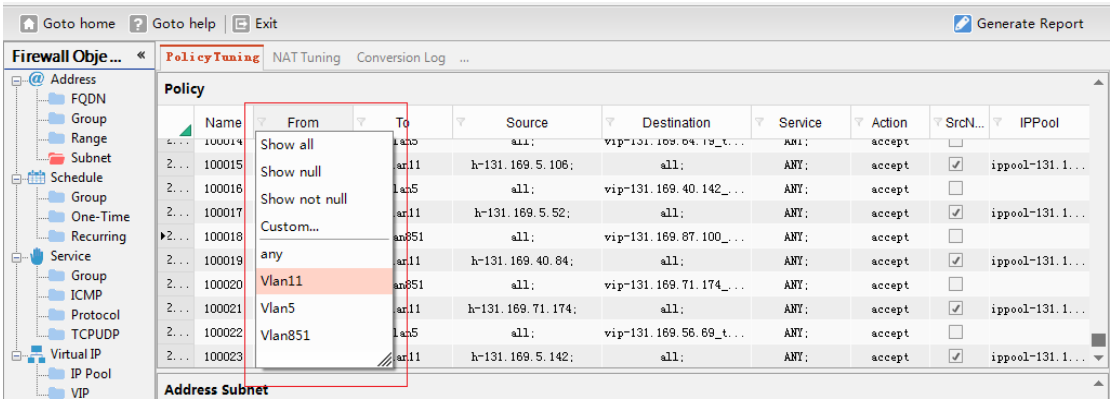


Finding references to objects

The *PolicyRef*. column shows the number of polices that reference that firewall object. By clicking the content, the specific numbers of policies will be shown in the policy table on the top right. Objects cannot be deleted if they are referenced (and therefore required) by another part of the configuration.

Filtering rows to display only matching data

Every column with the [filter mark] can be filtered by a given option or custom expression.



Reordering columns

To reorder columns, drag and drop them into position

Understanding your new configuration

In order to understand your new configuration, familiarize yourself with equivalent commands and differences.

Check Point differences

- FortiGate's `set allowaccess` command for interfaces does not exist on Check Point. Since this setting is required on FortiGate, FortiConverter will by default enable all services for interfaces.
- The interface "Lead to Internet" is a default static route on FortiGate.
- After converting the VPN configuration, the "Lead to Internet" interface will be referred to for the VPN policy's destination interface.

  If you used the wizard to change the default route's egress interface, you may need to update the VPN/Policy configuration manually.
- "by day in month" time schedules will be converted to FortiGate one-time schedules; "by day in week" and "none" will be converted to a recurring schedules.

  You must assign the year range for the Check Point "by day in month" time object. If the day does not exist for a certain month, FortiConverter will not generate the schedule.

  For example, if you configured the Check Point firewall's "by day in month" time schedule with the below parameters:

  For each year

  ```
  Month: Jan/Match/Sept.
  Day: 1, 5, 31
  Start and end time: 0:00 to 10:00
  ```

  if you had used the FortiConverter wizard to assign year range value 1, and had got current year value 2013 from local PC which run the wizard, the output for FortiGate one-time schedules would be like this:

  ```
  From 0:00 Jan/1/2013 To 10:00 Jan/1/2013
  From 0:00 Jan/5/2013 To 10:00 Jan/5/2013
  From 0:00 Jan/31/2013 To 10:00 Jan/31/2013
  From 0:00 Match/1/2013 To 10:00 Match/1/2013
  From 0:00 Match/5/2013 To 10:00 Match/5/2013
  ```

```
From 0:00 Match/31/2013 To 10:00 Match/31/2013
From 0:00 Sept./1/2013 To 10:00 Sept./1/2013
From 0:00 Sept./5/2013 To 10:00 Sept./5/2013
```

Notice that Sept. 31 does not exist.

- Rule actions with "Client Auth" will be converted to FortiGate user-identity policy with the “Accept” action.
- Static NAT for Check Point is a 1-to-1 IP relationship, but after converting to FortiGate NAT policy, source NAT with an IP pool is not a 1-to-1 relationship.
- On Check Point, VPN is not configured within a firewall rule. When converting to FortiGate, FortiConverter will generate several VPN policies from non-"Lead to Internet" interfaces to the "Lead to Internet" (default route) interface.

Cisco IOS, PIX or ASA differences

- FortiGate’s `set allowaccess` command for interfaces does not exist on Cisco firewalls. Since this setting is required on FortiGate, FortiConverter will by default enable all services for interfaces
- Cisco `object-group` objects have two types of service definitions. Only `service-object` items can be converted tino FortiGate services because FortiGate services have both a source and destination port. By default, the other type of service object, defined by `port-object`, is not converted. FortiConverter will generate FortiGate service objects from a Cisco ACL's protocol and source/destination port.
- On Cisco IPSec VPNs, Phase 1 (ISAKMP) supports more than two types of authentication methods. FortiGate supports only two types: `pre-share` and `rsa-sig`. Therefore you must assign methods for each VPN connection. Cisco EZVPN configuration will be converted to FortiGate VPN policies from the “Intranet” interface to the interface which was assigned by the `crypto map interface` command.
- FortiConverter does not support Cisco ASA objects for NAT and double NAT.
- FortiConverter does not support Cisco wild card netmasks for `access-list` and `object-group` objects.
- EZVPN conversion is not supported for Cisco IOS.

  For example, `crypto ipsec profile <profile-name>` and `crypto isakmp profile <profile-name>` are not supported.

Juniper ScreenOS or JunOS differences

- Interface names starting with "vlan" will be recognized as logical interfaces.

SonicWALL differences

- On FortiGate ‘#’, ‘(’ and ‘)’ are reserved special characters, and cannot be used in the configuration without a preceding escape sequence. FortiConverter uses these characters to replace them: ‘*’, ‘[’ and ‘]’. For example, if you have an address book with name “SNWL #1”, it will be translated to “SNWL *1”. If you have a service book with name "Citrix TCP (Session Reliability)”, it will be translated to "Citrix TCP [Session Reliability]".
- On FortiGate, address objects are IP addresses or FQDNs, not MAC addresses. As a result, SonicWALL MAC addresses will not be migrated.
- FortiConverter will generate two extra address book entries: “Any” and “_Address_Null”. “Any” is added because it is a default address book in SonicWALL.
  The reason for “_Address_Null” is that FortiGate address groups do not allow an empty group without any members, so “_Address_Null” can only be referred to by empty address groups.

Service book configuration:

- If you have configured a service book/group on SonicWALL, but this is predefined on FortiGate (such as HTTP port 80, HTTPS port 443, etc.), then the object would conflict, and therefore will not be generated.

Schedule configuration:

- SonicWall schedule group configuration has a little difference with FortiGate schedule group; SonicWall schedule group can contain only one “onetime” schedule and multiple “recur” schedule. The “onetime” schedule is an implicit object which can be embedded to the schedule group. But FortiGate cannot support this implicit attribution, every object (onetime or recur) which can be referred by schedule group need to be defined explicitly. This difference leads to some auto-generated “onetime” schedule appeared in the configuration text file.
- FortiGate time schedule configuration cannot support “24:00” (equal to the next day’s 00:00), when convert SonicWall recur time schedule like “M 00:00 to 24:00”, we need to set the end time with “00:00”. For FortiGate recur time schedule, “00:00” equals to “24:00”, so it’s just a display problem.

Local User and User Group:

- Because we cannot convert local user’s cipher password string, so we set the users initiated password “123456”.
- Nested user group is not supported. For example, there are two groups with the name group1 and group2, group1 belong to group2. SonicWall user group can support this nested group configuration, but FortiGate’s user group cannot support this feature. By deault, we remove the nested configuration.

Route configuration:

- We don't support tunnel route now (static route with the next hop tunnel interface), because the whole VPN configuration is not supported within this version, not to mention tunnel interface objects.
- Auto generated routes like connected route and host route are also not converted.

NAT policy configuration:

- NAT policy configuration constraint.
  - Because FortiGate configure NAT rules within policy module, each SonciWall NAT rule will be auto generated to one policy entry. If the NAT status is enabled, then the policy status also set to enabled, and vice versa. NAT generated policies ID starts from 10001. Normal policy rules starts from 0.
  - For source NAT, we will create a new IP pool object for FortiGate policy's source address.

    For example, SonicWall source NAT policy like below.

Org Src	Tran Src	Org Dest	Tran Dest	Org Serv	Tran Serv
All Interface IP	X2 IP	Any	Original	Any	Original

  After converting to FortiGate configuration, a new IP pool object with name "ippool_X2 IP" will be created, we just add a prefix "ippool_" before translated source address book "X2 IP".

  - For destination NAT, we will create a new VIP object for FortiGate policy's destination address.

    For example, SonicWALL's destination NAT policy like below.

Org Src	Tran Src	Org Dest	Tran Dest	Org Serv	Tran Serv
LAN Subnets	Original	WoW Static IP	X0 IP	SSLVPN	Original

  After converting to FortiGate configuration, a new VIP object with name "vip_X0 IP" will be created, we just add a prefix "vip_" before translated destination address book "X0 IP".

  If destination NAT only remapped port number, then the translated destination address would be "original". In this case, the new create VIP object will refer to the translated service object's name.

- There is a constraint for destination NAT configuration, FortiGate destination NAT only support VIP and VIP group. FortiGate VIP object requires strict 1-to-1 map between the external IP/Port and the mapped IP/Port. But as I know, SonicWall doesn't have this constraint for destination NAT.

  For example, SonicWall source and destination NAT policy like below.

Org Src	Tran Src	Org Dest	Tran Dest	Org Serv	Tran Serv
test_1112_grp	test_11_gw	test_12_gw	test_1211_grp	Echo	Original

This policy will translate IP packet's destination address, from address book "test_12_gw" to address group "test_1211_grp". Address book "test_12_gw" only contain one IP address, but address group "test_1211_grp" contain two address members "test_11_gw" and "test_12_gw". The result is we can't convert this NAT policy configuration to FortiGate policy configuration. This NAT policy will be ignored by converter because we don't know how to translate it.

- Another case:

Org Src	Tran Src	Org Dest	Tran Dest	Org Serv	Tran Serv
test_11_gw	test_12_gw	test_1112_grp	test_1211_grp	Echo	Original

This policy will translate IP packet's destination address, from address group "test_1112_grp" to address group "test_1211_grp". Assume that the address group "test_1112_grp" contains only one member "test_11_host", address group "test_1211_grp" contains two address members "test_11_gw" and "test_12_gw", then the problem is we cannot generate VIP objects correctly because of the VIP mapping constraint.

VIP mapping should be like this:

Ext ip mapped ip

Test_1112_grp Test_1211_grp

One IP address: Two IP address:

2.2.2.2 and 3.3.3.3

We cannot generate this VIP mapping object, because the "ext ip" and the "mapped ip" is not a 1-to-1 mapping.